

Operating an Electric Vehicle Fleet

Electric vehicles are becoming an increasingly important part of fleet operations due to lower running costs, reduced emissions, and improved driver experience, and this document provides guidance on how to ensure safe, efficient, and confident operation of EVs.

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Introduction

Successful EV fleet operation depends on strong planning, continuous review, and ongoing driver support.

Shift from fuel management to a data-led approach focused on telematics, energy optimisation, and driver behaviour. Build your strategy around four core pillars:

- Active software and performance monitoring
- Intelligent, efficient charging strategies
- Proactive maintenance planning
- Targeted EV driver training



Regularly review performance against operational needs to ensure continued efficiency, suitability, and value.

Electric vehicles operate differently from ICE vehicles, and understanding their key components helps drivers feel confident, safe, and in control. While EV technology is designed to be simple and intuitive, knowing how the main systems work will help drivers make the most of vehicle range, performance, and reliability.

Understanding your EV fleet

Operational oversight should include routine checks on key components such as proactive maintenance schedules and driving techniques for maximising range; along with charging infrastructure and best practices, to ensure the fleet continues to deliver value. Regular reviews of route suitability, driver feedback, utilisation patterns and telematics data will help you refine your EV fleet deployment, address emerging risks and optimise performance over time.

Proactive Maintenance Planning

Proactive maintenance is essential for electric vehicles because, although they generally require fewer routine repairs than ICE vehicles, they rely heavily on specialised systems that must remain in good working condition for a safe and reliable operation. Proactive maintenance also ensures that range and energy efficiency remain consistent by identifying issues such as excessive tread wear, damage and incorrect tyre pressures, sensor faults, or outdated software that may otherwise reduce vehicle performance.

- **Regenerative Braking System**

An EV range is affected by how the vehicle is driven and in particular how the effective vehicle's regenerative braking system is used. Regenerative braking occurs when the driver takes their foot off the accelerator pedal and uses the electric vehicle's motor as a generator to convert much of the kinetic energy lost when decelerating back into stored energy in the vehicle's battery. Then, when the EV accelerates, energy stored from regenerative braking can be used.

Regenerative braking systems are often adjustable and can be set so that they slow the EV down when the driver takes their foot off the accelerator and many drivers find they use this method rather than using the brake pedal. Driving in this way reduces brake wear and tear, and maintenance costs, whilst also extending mileage range. However, drivers need to familiarise themselves with the different levels as some are more effective for urban driving due to the level of braking undertaken, than for motorway driving.

- **Vehicle Battery**

The high-voltage battery stores electrical energy that powers the motor. Battery size (measured in kWh) influences how far the vehicle can travel on a single charge. Drivers should be aware that factors such as temperature, driving style, and use of heating or air conditioning can affect battery range. The EV battery benefits from regular checks to maintain its health, efficiency, and capacity, helping to preserve range and avoid costly repairs.

- **EV Battery Fires**

As EV battery technology develops at pace, the risk of fire is rare but something that EV Fleet Managers need to be aware of.

Lithium-ion batteries can catch fire for various reasons such as:

- Manufacturing fault
- Software that protects the battery from getting too much or too little electric charge has a fault or fails
- Damage and/or following a collision

If EVs are involved in a collision, the emergency services or vehicle recovery company will check for signs of damage to high voltage electrical components or cabling, to consider if the integrity of the battery is likely to have been compromised, and they will follow the required protocols. If the vehicle is brought back to the workplace, the same procedure for ICE vehicles involved in a collision should be followed; park them in the open air well away from buildings, other vehicles, flammable objects/surfaces until they are repaired.

- **Vehicle Recovery**

EVs involved in a collision or break down should be recovered by trained operatives, as they will be able to check for signs of damage to high voltage electrical components or cabling (usually coloured orange) and are trained in the safe movement of EVs.

Avoid towing an EV unless it can be determined that it is safe to do so, as dangerous voltages can be generated by movement of the drive wheels. Refer to the Aviva Loss Prevention Standard [Awareness when Working with Electric and Hybrid Vehicles.](#)

Driving Techniques

Driving style has a significant impact on how far an electric vehicle can travel on a single charge, and adopting safe and efficient driving techniques will help to maximise vehicle range whilst reducing energy costs.

Making use of regenerative braking also helps conserve energy; by easing off the accelerator early and allowing the vehicle to slow itself down, it will capture and return energy to the battery instead of wasting it through traditional braking.

Maintaining awareness of speed is another key factor, as keeping to steady, moderate speeds will help preserve battery power. Most EVs also offer an Eco driving mode, which automatically adjusts vehicle settings such as throttle response and climate control to support more efficient driving. Using this mode for routine journeys helps drivers maintain consistent energy use and achieve predictable, reliable range throughout the day.

- Driver Competence
Effective operation of an electric vehicle fleet relies on drivers being trained and familiar with EV specific characteristics, including:
 - The different types of charge points and how to use them
 - Safe and efficient driving techniques
 - Safety considerations
 - Understanding operational procedures

Drivers should have an awareness of potential EV fire risks, including the rare but unique characteristics of EV lithium-ion battery fires, safe charging practices and actions to take if an EV battery is defective or damaged, and the potential risk of thermal runaway incident is suspected.

Additionally, drivers need clear guidance on EV specific recovery procedures. In the event of an EV breakdown or collision, if it is safe to do so turn off your vehicle ignition to isolate the EV high voltage battery. As these vehicles require specialist handling, isolation protocols drivers must contact approved recovery operators to prevent further damage to the vehicle or exposure to high voltage hazards. Do not attempt to carry out any repairs yourself on an EV.

Structured, ongoing driver training is essential to ensure consistent performance, safe vehicle operation and compliance with organisational and regulatory requirements, supporting the overall safety and reliability of the EV fleet.

- Range Anxiety
EV mileage ranges are continually improving, with some vehicles reaching between 180-350 miles; enabling the growth of EVs across commercial fleets. Yet many people still have a fear that they will run out of power and not be able to find a working charge point, known as *range anxiety*.

Range anxiety can be reduced by initially understanding the mileage range required for journeys and loads to be carried, to enable the selection of appropriate vehicles to meet individual and business needs. Combined with robust route planning, including building in additional charging time if required also

identify the location of charge points on the route, be it public charge points or for commercial fleets through a reciprocal agreement with partners using charge points at their site(s).

Mileage ranges are the equivalent to mpg in ICE vehicles and are based upon the Worldwide Harmonised Light Vehicle Test Procedure ([WLTP](#)) test. There are factors which will impact upon EV ranges, such as:

- Average speed the EV is driven
 - Number of people in the vehicle
 - The load carried
 - Road and weather conditions, in particular cold weather
 - Types of roads driven, e.g., rural, urban or motorway
 - How the EV is driven, such as harsh braking and acceleration
- Increased Risk to Other Road Users
EVs operate much quieter than an ICE vehicle and there can be an increased risk to other road users not hearing them approach and the difficulty to judge the speed of the vehicle, especially Vulnerable Road Users (VRUs). Drivers must be instructed not to switch off sound generators in EVs and be informed of the need for greater awareness when driving in town centres and other built-up areas.

The Highway Code

Changes to the Highway Code include the [Hierarchy of Road Users](#). The hierarchy places those road users most at risk in the event of a collision at the top of the hierarchy. EV drivers should be reminded that those in charge of vehicles that can cause the greatest harm in the event of a collision, bear the greatest responsibility to take care and so reduce the danger they pose to others.

Charging Best Practices

Effective charging habits play a crucial role in maintaining the performance, reliability, and long-term health of an electric vehicle. Whenever possible, vehicles should be charged overnight or during low demand periods, as this reduces pressure on local energy networks and ensures the vehicle has sufficient charge for planned journeys.

Drivers should avoid charging to 100% on a daily basis unless the full range is required, because maintaining the battery at maximum charge for prolonged periods can place additional stress on battery cells and potentially shorten long term capacity. Battery care is another important aspect of EV operation and business should follow the manufacturers guidance on battery charging and maintenance. Drivers should be aware that extreme temperatures, both hot and cold, can temporarily reduce driving range, meaning additional planning may be required during periods of severe weather.

Type of Charge Points

Electric vehicles can be charged using several different types of chargers, each offering varying speeds and are suited to different operational requirements. Understanding the differences between charger types helps drivers plan efficiently and ensures vehicles remain ready for use when needed.

Charger Type	Power Output	Typical Locations	Best Use Case
Slow Charger	Up to 7 kW	Homes, workplaces, long stay car parks	Overnight charging or vehicles parked for several hours
Fast Charger	7-22 kW	Workplaces, public car parks	Faster top-ups during the day; useful for vehicles that need quick turnaround
Rapid / Ultra-Rapid Charger* <i>*Rapid charging places more thermal stress on the battery, it is generally better reserved for occasional use rather than daily routine charging</i>	50-350 kW (DC)	Motorway service areas, major roads, rapid-charging hubs	Long-distance travel and quick replenishment during shifts

EV chargepoint providers should be able to assist with tailoring a solution for your business with the ability to include passive provision to scale up the chargepoints. Consider site load management that controls the power rate of your chargers, by utilising as much of the site's energy supplies as possible.

Telematics

Telematic systems are beginning to integrate EV data to their management information and dashboards. Currently, the data available will vary between telematic providers, but can include:

- State of battery charge
- Real time details of EVs being charged
- Battery levels
- Remaining mileage range
- Cost analysis and efficiencies of EVs

Telematics systems can also highlight how driving style affects energy consumption; for example, identifying harsh acceleration, speeding, or limited use of regenerative braking, all of which can reduce range. By reviewing this data, you can also offer tailored coaching to help drivers adopt a smoother more efficient style that will help to prolong battery life and improve overall efficiency.

By integrating telematics into day to day operations, fleet managers can improve driver performance, reduce operating costs, optimise charging patterns, and extend the lifespan of the battery and vehicle; ultimately improving reliability and productivity across the fleet.

Emerging Risks

As EV's become more widely adopted across fleet operations, it is important to remain aware of emerging risks while implementing strategies that optimise long-term performance.

- **Battery Degradation**

If not maintained correctly, battery degradation can gradually reduce driving range if charging patterns, temperature exposure, or poor driving behaviour are not carefully managed. Remember to monitor trends in range reduction, charging frequency, and battery health reports to identify early signs of accelerated wear and tear.

- **Software**

As EVs rely heavily on software and connectivity, new risks can arise from outdated firmware, cyber security vulnerabilities, or incorrect system settings that may affect vehicle efficiency or safety. Ensuring vehicles receive regular software updates and maintaining a strong internal cyber security policy is essential to reducing these risks.

- **Charging Infrastructure**

Another challenge involves the availability and reliability of charging infrastructure. As you acquire more electric vehicles, unmanaged demand may lead to congestion at charging points, delays in vehicle readiness, or inconsistent charging behaviours that impact operational efficiency. Monitoring infrastructure usage through telematics and establishing clear charging schedules can help minimise downtime and ensure resources are used effectively.

- **Weather**

Weather-related factors also pose emerging risks, as extreme cold or heat can temporarily affect range and battery performance. Fleet managers should build seasonal planning into their operations, including adjusting route allocation and providing drivers with guidance on energy efficient driving during adverse weather conditions.

To optimise EV performance over time, fleet managers should use vehicle data and analytics to identify patterns in energy use, driver behaviour, and charging habits. Insights from telematics can guide driver coaching, highlight inefficient routes, and support the reassignment of vehicles to roles that better match their operational capability.

Optimising Performance

Electric vehicles offer a smooth, efficient, and environmentally responsible driving experience, but achieving consistent performance across a fleet requires more than simply adopting new technology. Optimal operation relies on competently trained drivers who understand how their behaviour influences range, battery health, and overall vehicle efficiency. Equally important are robust fleet procedures that support charging best practices, cyber awareness, proactive maintenance, route planning, and the use of telematics to monitor operational performance.

Planning future fleet changes with consideration for charging capacity, site layout, and vehicle utilisation patterns, will further support consistent performance as your fleet evolves. By staying ahead of emerging risks and using real time data to refine operational processes, you can help ensure EVs remain reliable, efficient, and safe throughout their lifespan.

Checklist

A generic Operating an Electric Vehicle Fleet Checklist is presented in Appendix 1 which can be tailored to your own organisation.

Specialist Partner Solutions

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For more information please visit:

[Aviva Risk Management Solutions – Specialist Partners](#)

Sources and Useful Links

- [CO2 emissions and fuel consumption](#)
- [Energy Saving Trust](#)
- [The Highway Code: Hierarchy of Road Users](#)
- [RC59: Recommendations for Fire Safety When Charging Electric Vehicles](#)
- [The Institution of Engineering and Technology \(IET\) Code of Practice for Electric Vehicle Charging Equipment Installation – 4th Edition](#)

Additional Information

Relevant Loss Prevention Standards include:

- [Implementing an Electric Vehicle Fleet](#)
- [Awareness When Working With Electric and Hybrid Vehicles](#)
- [Risk Management Guides – Lithium-ion](#)
- [12 Top Tips For Electric Vehicle Chargers](#)
- [Housekeeping](#)
- [Electric and Hybrid Vehicle Charging](#)
- [Electrical Installations Inspection and Testing](#)
- [Fire Safety Legislation](#)
- [Managing Change – Property](#)
- [Managing Change – Liability](#)
- [Managing Contractors – Property](#)
- [Workplace Transport Safety](#)

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Email us at riskadvice@aviva.com or call 0345 366 6666.*

*The cost of calls to 03 prefixed numbers are charged at national call rates (charges may vary dependent on your network provider) and are usually included in inclusive minute plans from landlines and mobiles. For our joint protection telephone calls may be recorded and/or monitored.

Appendix 1 - Operating an Electric Vehicle Fleet Checklist

Location	
Date	
Completed by (name and signature)	

	Operating an Electric Vehicle Fleet	Y/N	Comments
1.	Proactive Maintenance - Are you monitoring battery health indicators to identify early signs of degradation? - Have you scheduled regular software updates to ensure optimal performance, cyber risk and safety features? - Do you have a tyre checking procedure in place to ensure that EV tyres are safe, serviceable and correctly inflated to minimise rolling resistance? - Have you established intervals for inspecting workplace charging cables, connectors - Have you established intervals for inspecting home charging cables and connectors, if applicable? - Are you reviewing vehicle diagnostics or fault codes as soon as they appear? - Are you tracking patterns of high stress usage (fast charging frequency, heavy loads, extreme temperatures)?		
2.	Driving Skills and Techniques - Are drivers informed, trained and instructed on the safe use of an EV? - Are you encouraging drivers to adopt a smooth driving style to optimise energy regeneration at all times ? - Are your drivers made aware of driving at appropriate speeds to reduce the impact range? - Are you promoting the Eco driving mode where appropriate? - Are drivers aware of the benefits of defensive driving to enhance range and efficiency?		

	Operating an Electric Vehicle Fleet	Y/N	Comments
3.	Charging Best Practices - Are you ensuring vehicles charge within recommended limits (e.g. avoiding constant 100% or below 20% levels)? - Have you communicated the appropriate use of slow AC charging vs. rapid DC charging? - Are drivers aware to check charger availability before travelling to prevent delays? - Are you promoting best practice, such as removing their vehicle from the charging bay when their EV is charged? - Have you reviewed charging cost data to optimise charging times or locations?		
4.	Types of Charge Points - Do you know which vehicles in your fleet require different charger types? - Have you assessed whether your site needs additional AC or DC charging capacity? - Are you monitoring the use of home charging? - Are you evaluating public charging networks for reliability, speed, and cost?		
5.	Telematics - Are you using telematics to track real time usage and energy consumption? - Are you reviewing driver behaviour data to improve efficiency and safety? - Have you set alerts for low battery levels, high charging costs, or inefficient driving? - Are you monitoring charging times, session patterns, and downtime to improve utilisation? - Are you using telematics insights to schedule proactive maintenance?		
6.	Emerging Risks - Are you monitoring fire safety and thermal runaway risks associated with battery damage? - Have you assessed cyber security risks relating to connected EV systems and telematics? - Are you monitoring charger reliability issues that could disrupt operations? - Are you considering severe weather risks such as reduced range in cold conditions? - Have you reviewed safe charging practices to minimise electrical hazards, trip hazards or cable damage?		

	Operating an Electric Vehicle Fleet	Y/N	Comments
7.	Optimising Performance • Are you analysing usage data to match the right EVs to the right routes? • Are you adjusting vehicle schedules to minimise unnecessary rapid charging? • Have you identified opportunities to charge during off peak periods to reduce energy costs? • Are you reviewing whether drivers could benefit from additional EV driver training? • Are you planning regular reviews of vehicle energy consumption and route efficiency? • Have you created clear guidance for drivers on EV handling, charging and emergencies? • Are you monitoring feedback from drivers to identify concerns or training needs?		
8.	Additional comments:		

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